

ARCS PROCEDURE	SETTING UP K&Z TRACKER	PRO(TRK)-007.000
Author: C. Schulz		15 April 2002 Page 1 of 3

Setting Up K&Z Tracker

I. Purpose:

This procedure describes how to set up the K&Z Tracker at the ARCS Site in Manus, Nauru, and Darwin.

II. Cautions and Hazards:

None.

III. Requirements:

None.

IV. Procedure:

A. Checking Tracker Positions

1. Make sure that the tracker is level and pointing east when in the idle position.
2. Using the supplied program "SUNTRACKER.EXE," set the internal clock to local midnight, which will then set the tracker to its idle location of due east, and looking at the horizon. **Note: the clock uses UTC, not local time.**
3. After the tracker has reached its idle position, remove the top cover and check the leveling of the instrument with the built-in level mounted on the internal platform. Adjust the base mounting screws until this is correct.
4. In this position, and after leveling of the base, ensure that the solar tracker is exactly horizontal and that the shading mechanism actuator arms attached to the two disks on the horizontal axis spindle are exactly level. Use a spirit level to check this. There is a clamping screw in the hub of the disk to tighten the disk onto the spindle.
5. Ensure that the active surface of the radiometers is 213.5 mm above the center of the horizontal shaft. This is difficult to measure and it was determined experimentally that a height of 177 mm above the radiometer mounting deck is about right.

B. Re-Initializing Tracker

It is best to re-initialize the tracker if the leveling and/or idle settings were changed much.

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1. This is accomplished by manually editing the file "BASELINE.INI," which will be in the same directory that "SUNTRACKR.EXE" is in. This file is read during a reset and will contain the default values that are to be used for initialization. Note: Before modifying this file, make a backup copy and label it "FACTORY.INI" or something to retain the original factory settings for reference later if needed.
2. Most of the site parameters will be stored in the file "SUNTRAKR.INI," which will have been created during initial commissioning. This will contain site-specific data. **Note that while the current settings are stored in "SUNTRACKR.INI," these are NOT used during initialization but rather BASELINE.INI. You could modify "SUNTRACKR.INI" and rename it to "BASELINE.INI" after saving the original BASELINE.INI as noted above.**
3. The parameter most likely requiring editing will be the line "; degrees from reference to origin."
4. This should be edited to read "-90.000 -90.000; degrees from reference to origin." **Note: Make sure that the lines latitude and longitude reflect the local position.**
5. Change the line "; below which sun is obscured : to 300 not 100 as in the handbook.
6. Save the amended file.

C. Restarting Tracker

1. Go back to "SUNTRACKR.EXE" with the serial cable connected to the PC and go to the setup screen and RESET / RESTART.
2. The tracker will go through its initialization; This may take quite some time, and then eventually move to the correct position to track the sun.
3. If all goes well, the spot indicator on the NIP sensor should be centered. If this is not the case then make small adjustments to the nylon adjusting screws that position the sun sensor until all is well. Follow the handbook procedure for this as this works well. Set the seconds of continuous sun to 10 while doing this adjustment, but reset it to 600 after final alignment.
4. The tracker should now have read the amended file and started up with the correct values.
5. The time should now be reset to correct UTC time and then follow the handbook to use the sun sensor to correct for instrument pointing errors. This may have to be done a few times until the error reported is less than 0.5 degrees for both axis.
6. It is possibly best to run the tracker in calculation mode initially to check for errors in setting up. Make sure that both SUN CORRECTION and TIME CORRECTION are unchecked in the setup box.

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7. After confirming that all is well in this mode SUN CORRECTION mode may be enabled if required.
8. If it is found that the internal clock error is excessive over a longer period of time then it could be helpful to enable the CLOCK CORRCETION as well.
9. When these procedures were followed the tracker worked well and reliably.

V. References:

None.

VI. Attachments:

None.